Nathan Louie

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Education

University of Washington: 3.93 — Seattle, WA

Bachelor of Science in Computer Science: 3.9

Bachelor of Science in Mathematics: 3.94 — *Sept. 2021 - June 2024*

Experience

WXML Participant — Sept. 2023 - Present

University of Washington — *Seattle, WA*

- Participating in the Washington eXperiment Mathematics Lab. Our project is on the formalization of mathematics using Lean, guided by Professor Jarod Alper. Currently, we in the process of learning the language.

REU Participant — June 2023 - Aug. 2023

Northwestern University — *Evanston, IL*

- Participated in a eight-week REU on dynamical systems under Professor Aaron Brown funded by NSF RTG. We were able to construct a original smooth Anosov actions on the 3-torus and other nilmanifolds by surface groups, and further explored properties surrounding it. See report.

Summer School Participant — June 2023 - June 2023

Northwestern University — *Evanston, IL*

- Attended a two-week summer school on dynamical systems, funded by NSF-RTG and NSF-CAREER. The school included advanced mini-courses and talks on current research. See content.

Algebra Mentorship — Jan. 2023 - Present

University of Washington — *Seattle, WA*

- Colead and mentored a group of accelerated undegraduate students in an abstract algebra reading group to prepare them for graduate courses. To continue this reading group with a new set of students this year.

Independent Reading Groups — Dec. 2021 - Present

University of Washington — *Seattle, WA*

- Participated in and organized the following readings groups, all of which included solving exercise problems, presentations, and mentorship from graduate students:
  - *Algebra: Chapter 0* by Aluffi and *Abstract Algebra* by Dummit and Foote (two quarters).
  - *Introduction to Topological Manifolds*, by Lee, with emphasis on homotopy theory (one quarter).
  - *Real Analysis Modern Techniques and their Application*, by Folland (one quarter).
  - *Algebraic Topology*, by Hatcher, with emphasis on homology theory (two quarters).
  - *Sheaves in Geometry and Logic*, by MacLane and Moerdijk, on topos theory (presently).
  - *Frobenius Algebras and 2D TQFT*, by Joachim Kock (presently).

Junior Content Developer — Aug. 2021 - Sept. 2021

Red Lens Games & Mojang Studios — *Seattle, WA*

- Designed and implemented modifications packs using JSON with assistance from professionals in the company. Led and directed a team of high-schoolers to brainstorm, implement, and present their own custom packages.

Additional Information

Programming Skills: Java, Python, C/C++, SQL, LaTeX, Mathematica, Sage, GAP, and Lean.

Outreach: Math Hour Olympiad Judge 2023 and UW Undergraduate Journal Peer Reviewer.

Awards: Wisniewski Endowed Scholarship 2024 and BAVA Scholarship 2021/2/3.

Talks Attended: UW-PIMS Colloquium Series 2023/4, and K-OS Knot Online Seminar 2023.

Languages: English (native), Cantonese (native), Japanese (beginner).